Contents

Conference Photograph vi

Preface vii

Conference Organization viii

Chapter 1. Growth and structure of surfaces and interfaces

Epitaxial clusters studied by synchrotron X-ray diffraction and scanning tunneling microscopy
M. Nielsen, R. Feidenhans'l, F. Berg Rasmussen, J. Baker, G. Falkenberg, L. Lottermoser, R.L. Johnson, A.J. Steinfort and P.M.L. Scholte 1

Measurement of the magnetism of a single atomic plane with X-ray diffraction
S. Ferrer, J. Alvarez, X. Torrelles, E. Lundgren and P. Fajardo 9

Surface and interfacial magnetic diffuse scattering
M. Takeda, Y. Endoh, A. Kamijo and J. Mizuki 14

Investigation of strain relaxation in GaInAs/GaAs superlattices by X-ray diffuse scattering
A. Ulyanenkov, U. Klemradt and U. Pietsch 25

Non-specular X-ray reflection from sputtered Ni_3Al/Ni multilayers
S. Tixier, P. Böni and H. Van Swygenhoven 31

Strain relaxation in thin films of Cu grown on Ni(0 0 1)
F. Berg Rasmussen, J. Baker, M. Nielsen, R. Feidenhans'l and R.L. Johnson 34

Fe/Au multilayer growth fronts: Comparison of X-ray diffuse scattering results with atomic-force microscopy profiles
R. Paniago, P.C. Chow, R. Forrest and S.C. Moss 39

High resolution X-ray scattering investigation of Pt/LaF_3/Si(1 1 1) structures
S.S. Fanchenko, N. Jedrecy, W. Moritz and A.A Nefedov 48

On the reflectivity of reactively sputtered Ni/Ti multilayers
M. Senthil Kumar, P. Böni and S. Tixier 53

A high-resolution synchrotron X-ray scattering study of the surface and interface structures of $YBa_2Cu_3O_x$ thin films
W.J. Lin, P.D. Hatton, F. Baudenbacher and J. Santiso 56

X-ray reflection and diffuse scattering from sputtered gold films
C. Schug, P. Lamparter and S. Steeb 62

On the growth process of a layered material on a covalent substrate: GaSe/Si
N. Jedrecy, R. Pinchaux and M. Eddrief 67

An X-ray diffraction study of direct-bonded silicon interfaces: A model semiconductor grain boundary
P.B. Howes, M. Benamara, F. Grey, R. Feidenhansl, M. Nielsen, F. Berg Rasmussen and J. Baker 74

On the interface strain distribution in Si-on-sapphire system
E. Gartstein, S. Lach, D. Mogilyanski, H. Metzger and J. Peisl 79

Surface effects in displacive phase transformations studied by X-ray specular reflectivity
U. Klemradt, M. Fromm, G. Landmesser, H. Amschler and J. Peisl 83

Hydrogen segregation at the Al/Si(1 1 1) interface
G.P. Felcher, W. Dozier and A.D. Marwick 90

Energy-dispersive surface X-ray scattering study of thin ceria overlayer on zirconia: Structural evolution with temperature
W. Dmowski, E. Mamontov, T. Egami, S. Putna and R. Gorte 95

X-ray diffraction and reflectometry studies of porous silicon: n-type layers and holographic gratings
V. Chamard, G. Dolino, G. Lérondel and S. Setzu 101

Structural characterisation of a GaAs surface wire structure by triple axis X-ray grazing incidence diffraction
N. Darowski, K. Paschke, U. Pietsch, K. Wang, A. Forchel, D. Lübbert and T. Baumbach 104

In situ fixed angle X-ray reflectivity study of sputter-deposited amorphous $LaNiO_3$ thin film on Si substrate
C.-H. Lee, H.-Y. Lee, K.S. Liang and T.-B. Wu 109

Chapter 2. Surface magnetism

Depth-dependent investigation of the distribution of the spin density waves in thin chromium films with surface X-ray and neutron scattering
P. Bödeker, A. Schreyer, P. Sonntag, C. Sutter, G. Grübel, R. Günther and H. Zabel 115

Magnetic anisotropy and exchange biasing in heterojunctions studied by transverse magnetic circular X-ray dichroism
G. van der Laan and H.A. Dürr 121

Sensitivity of magnetic X-ray dichroism for chemical order in MBE-grown FEPD layers
P. Kamp, M. Belakhovsky, C. Boeglin, H.A. Dürr, G. van der Laan, P. Schille, A. Rogalev, J. Goulon, V. Gehanno, A. Marty and B. Gilles 127

Resonant X-ray magnetic scattering from the twisted states of an Fe/Gd multilayer
H. Hashizume, N. Ishimatsu, O. Sakata, T. Iizuka, N. Hosoito, K. Namikawa, T. Iwazumi, G. Srajer, C.T. Venkataraman, J.C. Lang, C.S. Nelson and L.E. Berman 133

Structural and magnetic properties of ion beam sputtered NiMnSb films
J.-P. Schlomka, W. Press, M.R. Fitzsimmons, M. Lütt and I. Grigorov 140

Resonant X-ray reflectivity measurements of a magnetic multilayer $[Gd/Fe]_{10}$
D.R. Lee, Y.J. Park, S.H. Park, Y.H. Jeong, K.-B. Lee, N. Ishimatsu, H. Hashizume and N. Hosoito 146

X-ray and neutron reflectivity investigations of Co/Cu multilayers
D.E. Joyce, S.I. Campbell, P.R.T. Pugh and P.J. Grundy 152

Non-specular spin-flipped neutron reflectivity from a cobalt film on glass
H. Fredrikze, T. Rekveldt, A. van Well, Y. Nikitenko and V. Syromyatnikov 157

Penetration depth of $YBa_2Cu_3O_7$ measured by polarised neutron reflectometry
J.M. Reynolds, V. Nunez, A.T. Boothroyd, T. Freltoft, D.G. Bucknall and J. Penfold 163

Determination of the magnetic field penetration depth in $YBa_2Cu_3O_7$ superconducting films by polarized neutron reflectometry
V. Lauter-Pasyuk, H.J. Lauter, V.L. Aksenov, E.I. Kornilov, A.V. Petrenko and P. Leiderer 166

Chapter 3. Soft matter

Some improvements and extensions of the application of specular neutron reflection to the study of interfaces
Z.X. Li, P.N. Thirtle, A. Weller, R.K. Thomas, J. Penfold, J.R.P. Webster and A.R Rennie 171

Surface activity of modified dendrimers at high compression
G.F. Kirton, A.S. Brown, C.J. Hawker, P.A. Reynolds and J.W. White 184

Thinning transitions and fluctuations of freely suspended smectic-A films as studied by specular and diffuse X-ray scattering
E.A.L. Mol, G.C.L. Wong, J.M. Petit, F. Rieutord and W.H. de Jeu 191

Binary phase diagram of monolayers of simple 1,2-diol derivatives
C. DeWolf, F. Bringezu, G. Brezesinski, H. Möhwald, P. Howes and K. Kjaer 199

Neutron reflectivity study of a chemically end-grafted polystyrene brush in a binary solvent mixture
S.K. Satija, P.D. Gallagher, A. Karim and L.J. Fetters 204

Comparison between macroscopic and microscopic measurements of the shear elastic constant of alcohol monolayers at the air–water interface
C. Zakri, A. Renault and B. Berge 208

Phase behaviour of a methyl branched phosphatidylethanolamine in two and three-dimensional systems
F. Bringezu, G. Rapp and G. Brezesinski 211

Liquid-like interfacial correlation in LB films
M.K. Sanyal, J.K. Basu and A. Datta 217

The structure and composition of mixed cationic and non-ionic surfactant layers adsorbed at the hydrophilic silicon surface
J. Penfold, E.J. Staples, I. Tucker, L.J. Thompson and R.K. Thomas 223

Dewetting of thin polymer films: an X-ray scattering study
P. Müller-Buschbaum and M. Stamm 229

Surfaces of tricontinuous structure formed by an ABC triblock copolymer in bulk
Y. Matsushita, J. Suzuki and M. Seki 238

Neutron reflectivity studies of composite nanoparticle – copolymer thin films
V. Lauter-Pasyuk, H.J. Lauter, D. Ausserre, Y. Gallot, V. Cabuil, B. Hamdoun and E.I. Kornilov 243

Organic monolayers: Interface between 8CB liquid crystals and MoS_2 monocrystal
E. Lacaze, M. Alba, J. Barré, A. Braslau, M. Goldmann and J. Serreau 246

Ordering of diblock PS-PBMA thin films: An X-ray reflectivity study
G. Vignaud, A. Gibaud, G. Grübel, S. Joly, D. Ausserré, J.F. Legrand and Y. Gallot 250

Investigation of the vertical molecular exchange in a complex organic multilayer system
U. Englisch, F. Peñacorada, I. Samoilenko and U. Pietsch 258

The interface structure of thin liquid hexane films
A.K. Doerr, M. Tolan, T. Seydel and W. Press 263

Structure studies of a phospholipid monolayer coupled to dextran sulfate
K. de Meijere, G. Brezesinski, O. Zschörnig, K. Arnold and H. Möhwald 269

Specular and non-specular X-ray reflection from inorganic and organic multilayers
D.K.G. de Boer, A.J.G. Leenaers, M.W.J. van der Wielen, M.A.C. Stuart, G.J. Fleer, R.P. Nieuwhof, A.T.M. Marcelis and E.J.R. Sudhölter 274

X-ray reflectivity study of fine structure of thin polymer films and polymer assembly at interface
H. Yamaoka, H. Matsuoka, K. Kago, H. Endo and J. Eckelt 280

Microphase-separated interface of a two-component triblock copolymer with a lamellar structure
N. Torikai, Y. Matsushita and T. Ebisawa 284

Chapter 4. Liquid surfaces

The structure of block copolymers at the fluid/fluid interface
B.J. Clifton, T. Cosgrove, R.M. Richardson, A. Zarbakhsh and J.R.P. Webster 289

Neutron scattering studies of the structure and dynamics of methane absorbed on MgO(100) surfaces
L.Z. Larese 297

Neutron reflection studies of titanium segregation to metal–ceramic interfaces
B. Derby, P. Xiao and J. Webster 304

Investigating liquid surfaces down to the nanometer scale using grazing incidence X-ray scattering
C. Fradin, A. Braslau, D. Luzet, M. Alba, C. Gourier, J. Daillant, G. Grübel, G.Vignaud, J.F. Legrand J. Lal, J.M. Petit and F. Rieutord 310

High temperature neutron reflection spectroscopy of liquid metal/ceramic interfaces
R.T. Edwards, B. Derby, P. Xiao and J. Webster 316

SANS investigations of benzene adsorption on porous silica gel
J.D.F. Ramsay and E. Hoinkis 322

Chapter 5. Instrumentation/techniques

The Bayesian approach to reflectivity data
D.S. Sivia and J.R.P. Webster 327

Phase determination and inversion in specular neutron reflectometry
C.F. Majkrzak, N.F. Berk, J.A. Dura, S.K. Satija, A. Karim, J. Pedulla and R.D. Deslattes 338

Grazing incidence diffraction by epitaxial multilayered gratings
G.T. Baumbach, D. Lübbert, U. Pietsch, N. Darowski, L. Leprince, A. Talneau and J. Schneck 343

ADAM, the new reflectometer at the ILL
A. Schreyer, R. Siebrecht, U. Englisch, U. Pietsch and H. Zabel 349

Neutron double multilayer monochromator-polarizer Co/Ti
V.G. Syromyatnikov, A. Menelle, Z.N. Soroko and A.F. Schebetov 355

X-Ray diffraction under surface acoustic wave excitation
W. Sauer, T.H. Metzger, J. Peisl, Y. Avrahami and E. Zolotoyabko 358

Surface profiles from polarization measurements in neutron reflectometry
R. Lipperheide, J. Kasper and H. Leeb 366

A white beam neutron spin splitter
T. Krist, F. Klose and G.P. Felcher 372

About using double multilayer monochromators in reflectometry
V.G. Syromyatnikov 377

X-ray reflection by multilayer surface gratings
P. Mikulík and T. Baumbach 381

Chapter 6. Satellite meeting contributions

Surface morphology by reflectivity of coherent X-rays
I.K. Robinson, J.A. Pitney, J.L. Libbert and I.A. Vartanyants 387

Synchrotron X-ray reflectivity study of Co/Cu multilayer structure
C.C Tang, N.D. Telling and S. Langridge 395

X-ray scattering with partial coherent radiation: The exact relationship between "resolution" and "coherence"
M. Tolan and S.K. Sinha 399

Texture determination by energy-dispersive XRD
M.A. Player, Z. Shi, S.M. Clark, M.C. Miller and C.C. Tang 405

List of Contributors 411

Subject Index 413